

That the external membrane is not continued on to these papillary projections may be seen by an examination of the pollen of *Stachytarpheta mutabilis*, in which there is a distinct line of separation between them and the surface of the external membrane.

With respect to the motion of the "molecular particles" found in the fovilla, Mohl thus expresses himself:—"I cannot refrain from remarking on this subject, that the movement of the grains differs in no way from the motion of all other little organic and inorganic particles; for example, globules of milk, whether vegetable or animal, metallic precipitates, &c.; that their oscillatory motion is altogether the same, and is distinguished in a manner equally striking from the spontaneous movement of infusories."

In concluding my strictures, I would observe, that to Dr. Mohl is due, and ought to be accorded, the highest credit, both for the general accuracy of his observations, as well as for their great extent. Mohl, although in error in a few instances, has been very successful in his perception of the chief differences which characterize the principal types of pollen granule met with in the course of his investigations; and it is a source of no little gratification to me to find that I should have arrived at results in this respect so nearly similar to Mohl's own, deduced from investigations carried on independently of all knowledge of his previous inquiries but that acquired from Lindley's 'Introduction.' Mohl's work in 4to, with 6 plates, was published in Berlin in 1834, a short time subsequently to the appearance of Fritzsche's first memoir in the Transactions of the St. Petersburg Academy upon the same subject. An abridged translation of Mohl's work is contained in the 'Annales des Sciences Naturelles,' vol. iii. 2nd Series,—Botanique.

Of Mohl's opinions regarding the value of the pollen granule as an assistant in classification, I have spoken fully in a paper, a portion of which is inserted in Annals for last October\*.

January 17th, 1842.

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XII.—On *Valerianella olitoria* and *V. gibbosa*. By CHARLES C. BABINGTON, M.A., F.L.S., F.G.S.

IN a valuable paper upon the genus *Fedia* (*Valerianella*) published in the 'Linnæan Transactions,' Mr. Woods states that

\* The above observations were penned on a perusal of Mohl's work, made some time subsequently to the completion of my paper on the pollen, the greater part of which has yet to appear, and which is delayed until the numerous illustrations which accompany it can be got ready.

he had not seen any specimens of the *F. gibbosa* of Gussone, and most correctly observes, that the figure given by DeCandolle (Mém. sur les Valerianées, tab. iii. f. 3.) as representing the fruit of that plant, would lead us to believe that it was scarcely more than a variety of *F. olitoria*. Mr. Leighton also, in the addenda to his valuable 'Flora of Shropshire,' compares the *Valerianella olitoria* of that county with the same figure, and expresses his opinion that the English plant is very nearly, if not exactly, the same as that of which the fruit is represented by DeCandolle's fig. 3, the only difference being the imperfect state of the dissepiment in our plant and its completeness in *V. gibbosa*, and also the ciliated bracteas of the former and their being constantly entire in the latter. From these circumstances considerable doubts have been expressed concerning the claims of these plants to be considered as distinct species. Before combining them however it was but fair to refer to the characters of the latter plant as given by its original describer Gussone (Fl. Sic. Prod., i. 28.), and there we find the fruit stated to be "altero latere coarctato plano, altero gibbo longiore, utrâque facie bistriato costis prominentibus;" and of *V. olitoria* he says, "altero latere coarctato utrâque facie bistriato." Here we first remark that the word "plano" is omitted in the second of these descriptions, and by referring to my fig. 1. it will be seen how justly what is usually called the front of the fruit, but by Gussone denominated one of the sides, is described as "plane" when compared with the same part in my fig. 2. Again, we find that the words "costis prominulis" are only employed in one of these characters as descriptive of the sides (or faces, according to Gussone's nomenclature) of the fruit, and by referring to the same figures it will be seen how correct a distinction this is. Without the aid of the figures however it would have been far from easy to determine the true distinctions between the plants, and this difficulty was greatly increased by the incorrectness of the only published representation of the fruit of *V. gibbosa*, namely, that in DeCandolle's memoir to which I have already referred.

I have now to state my reasons for believing that the fruits, of which my fig. 1. is a representation, are truly those of *V. gibbosa*. Gussone states that the discoverer of his plant was Gasparini, and it fortunately happens that that same botanist (Gasparini) has supplied me with specimens gathered in Sicily, and which he states to be *V. gibbosa*. From these specimens, which agree exactly with Gussone's characters and Bertoloni's detailed description, my drawing of the *fully ripe*

fruit has been made. It is scarcely necessary to state, that in the fully ripe fruit alone can the curious distinctive characters employed in this genus be satisfactorily ascertained.

In *V. olitoria* the transverse section of the fruit shows three cells; one, nearly filled by the solitary ripe seed, has its outside enormously thickened by the development of the sarcocarp into a spongy or corky mass, down the back of which there is usually a slight furrow; and two barren cells, which are quite empty and separated from each other by an imperfect dissepiment. These barren cells are nearly equal, compressed, lateral and rounded in front, and are usually much larger than the fertile cell; their point of junction is usually marked by a shallow furrow, and each of them has a single slender rib upon its side. The presence or absence of the anterior and posterior furrows, and the greater or less development of the spongy mass, must be excluded from the specific characters, as not being possessed of sufficient constancy for scientific discrimination.

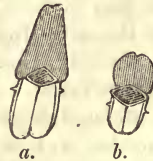
In the fruit of *V. gibbosa* we find the same three cells and the same spongy furrowed mass upon the back of the fertile one, but each of the barren cells is furnished with two longitudinal prominent ribs formed of the same spongy structure as the back of the fertile cell. Thus each side of the fruit presents two deep furrows and two prominent ribs, whilst in *V. olitoria* the furrows are totally wanting and the ribs are reduced to the one slender line upon each barren cell and the slightly projecting angle of the fertile cell.

It is hoped that there will not now remain any doubts concerning the specific distinctness of these two plants. It only remains for me to state that the drawings represent the appearance presented after the fruit has been divided transversely at about its middle.

Fig. 1.



Fig. 2.

Fig. 1. *Valeriana gibbosa* from Sicily.Fig. 2. *V. olitoria* (a) from an English, (b) from a Neapolitan specimen.

St. John's Coll., Cambridge, March 8, 1842.